REMARKS

This paper is responsive to the Office action mailed on 29th June 2009 wherein claims 1-39 were rejected. By this paper, Applicant has canceled claims 1 and 35, amended claim 2-9, 11, 17, 22, 29, 34, 39, and added a new claim 40. No new subject matter is added. Support for the added claim can be found at least in paragraphs [0024], [0031], [0032]. Claims 2-34, 36-40 remain pending in this application.

In view of the above amendment and the following remarks, Applicant requests further examination and reconsideration of the present patent application.

35 USC §103

The Examiner rejected claims 1,4-11,14-21,34,35,38,39 under 35 USC §103(a) as being unpatentable over U.S. Patent No. 4,749,005 (hereinafter "Bergquist") in view of U.S. Patent No. 5,795,998 (hereinafter "Smith"). The Applicant respectfully traverses these rejections.

The Examiner also rejected claims 2,3,12,13,22,23,28-33,36,37 under 35 USC §103(a) as being unpatentable over U.S. Patent No. 4,749,005 (hereinafter "Bergquist") in view of U.S. Patent No. 5,795,998 (hereinafter "Smith"), further in view of U.S. Patent No. 5,924,857 (hereinafter "Frasnetti"). The Applicants respectfully traverse these rejections.

Claims 40, 11, 34

Independent claim 40 recites, *inter alia*, "a pressure regulator adapted to regulate a gas flow . . . ; a gas burner . . . , said orifice coupled to a venturi; and a gas fuel boost pump disposed downstream of the pressure regulator and configured to increase a primary air entrainment in the venturi . . ." (Emphasis added)

Independent claim 11 recites, *inter alia*, "a pressure regulator . . .; a gas fuel boost pump placed downstream of the pressure regulator . . . ; a gas burner . . ., said gas fuel boost pump further configured to increase a primary air entrainment in a venturi coupled to the gas burner; and a transducer disposed upstream of the gas burner and adapted to measure a parameter of gas flow from the gas fuel boost pump pressure at a predetermined location" (Emphasis added)

Independent claim 34 recites, *inter alia*, " . . .a gas burner coupled to the pressure regulator and comprising at least one orifice, . . .a gas fuel boost pump disposed downstream of

the pressure regulator and adapted to increase a primary air entrainment within the venturi by increasing the pressure of the gas flow received from the gas feed line" (Emphasis added)

Applicants submit that independent claims 1, 11, 34 recite, in generally similar language, the gas range system including *gas fuel boost pump disposed downstream of the pressure regulator* and configured to *increase a primary air entrainment within a venturi* by increasing pressure of a gas flow received from the gas feed line.

The Examiner argued that Bergquist shows a method of enhancing burner performance and a gas range system that includes a pressure regulator in the form of a actuating device (12), which functions to regulate gas flow through a gas feed line (10). The second flow regulator (C) performs the functions at a regulated pressure. The Examiner acknowledges the fact that Bergquist does not disclose the use of a fuel boost pump.

Applicants submit that, the primary reference Bergquist fail to disclose a pressure regulator as recited by the independent claim 1. In sharp contrast, a combined pressure regulator and manual shut off valve in Bergquist is configured to shut off gas flow and regulate the gas flow by way of increasing or decreasing the pressure of the gas flow.

See FIG. 5 and 7, and col. 3, lines 55-62:

> "With particular reference to FIGS. 5 and 7, the combined valve includes a pressure regulator 60 for *regulating the pressure of gas flowing therethrough.* The pressure regulator includes a gas receiving regulator chamber 62 which is operatively connected with the fluid inlet 46 through a valve seat 64. A regulator member or poppet 66 disposed adjacent the valve seat 64 is connected with a diaphragm 68 for movement therewith." (Emphasis Added)

However, in the present application, the pressure regulator is coupled to gas feed line to increase the gas flow pressure. It may be noted form the cited passages of Bergquist, the pressure regulator 60 *does not* perform the intended function of a pressure regulator as recited in the present claims.

Second, the primary reference Bergquist does not teach or suggest a gas fuel boost pump as admitted by the Examiner. Further, the variable speed or variable displacement pump in secondary reference Smith does not obviate this deficiency in Bergquist and this clearly indicates neither of the references discloses a gas fuel boost pump.

Examiner argued that Smith discloses a microcontroller (22) connected to a transducer (20 or 38), and a variable speed or variable displacement pump (25) and that the controller

coupled to the variable speed pump serves to supply the required pressure with a high degree of accuracy. Furthermore, Examiner apparently equated the variable displacement pump in Smith with the gas boost pump in the present application. Applicants wish to submit that such a comparison is erroneous. Smith teaches a servo control loop-regulating pump configured to regulate a flow rate as evident in Col. 5 lines 19-28:

> "The output of the flow sensor 26 is connected to the control unit 22 to form a fast inner flow demand loop providing *servo-control of the pump* 25. In particular, the control unit provides *a flow rate demand and compares this with the flow rate measured by the flow sensor* 26. The control unit 22 then controls the pump 25 via the motor 23 and the servo 24 in accordance with the error between the actual and demanded flow rates so as to reduce the error substantially to zero and establish the demanded fuel flow rate." (Emphasis Added)

Clearly, the servo-control pump in Smith is configured to regulate a flow rate demand and compare this with the flow rate measured by the flow sensors. In contrast, the present application does not regulate a flow rate but "increases pressure of gas flow" to increase "primary air entrainment" within a venturi of a gas burner as recited in the claims.

Applicants submit that the Examiner apparently intended to refer to Bergquist for teaching the fuel regulator and Smith for teaching a fuel regulating pump and pump controller. However, neither of these references discloses a fuel boost pump disposed downstream of the pressure regulator. Further, neither of the references disclose a fuel boost pump configured to increase primary air entrainment within a venturi of the gas burner by increasing the pressure of the gas flow from the gas feed line.

Applicant submits that even if the valve of Bergquist were to be replaced with a variable speed or variable displacement pump of Smith the system would not have a gas fuel boost pump. Further, such system will not be able to achieve *a pressure boost* of the gas flow from the gas feed line and increase primary air entrainment within the venture.

In sharp contrast, Smith teaches that a constant pressure is maintained between inlet and outlet by varying size of the metering profile defined the meter profile 10 and the opening 12 in col 3. lines 55-57:

> "Thus, a constant pressure is maintained between the inlet 5 and the outlet 11 by varying the size of the metering profile defined between the meter profile 10 and the opening 12." (Emphasis added)

However, the present invention provides enhancing performance of a gas burner by increasing air entrainment of the gas flow received from the gas feed line. In particular, the primary air enhancement is increased via increasing the pressure of the gas flow by a *gas fuel boost pump* that is disposed downstream of the pressure regulator. As discussed above, Bergquist and Smith, even in combination does not teach such an arrangement.

Following the alternative teachings of Smith (i.e., fuel regulating pump and pump controller), the modification proposed by the Examiner would effectively replace the valve of Bergquist with a fuel regulating pump and pump controller. Applicants point out that such replacement would result in a fuel regulating system to eleminate *upstream pressure variations,* while the current claims require *an increase in the gas flow pressure.* Applicants further submit that such fuel regulating pumps are well known and used for pressure control and to maintain a flow rate demand. See, Smith Col. 5, lines 22-24. Therefore, even in combination, Bergquist and Smith do not teach an increase in pressure of the gas flow downstream of the pressure regulator to increase a primary air entrainment in the venture.

Therefore, Applicants submit that independent claims 40, 11, 34 are allowable over the proposed combination, and respectfully request the Examiner to reconsider the rejection of the claims. Claims 2-10, 12-20, 35-39 depend from independent claims 40, 11, 3, respectively. Applicants respectfully submit that insomuch as indepdendent claims 40, 11, 34 are allowable, these claims are allowable at least by virtue of their dependency from an allowable base claim.

Claims 22 and 29

Independent claim 22 recites, "actively increasing pressure of a gas flow through a gas feed line via a gas fuel boost pump . . . ; increasing a primary air entrainment within a venture coupled to the gas burner. . ." (Emphasis added)

Independent claim 29 recites, *inter alia*, "increasing pressure of a current gas flow through a gas feed line via a gas fuel boost pump . . . ; increasing a primary air entrainment within a venture coupled to the gas burner; . . ." (Emphasis added)

Applicants submit that independent claims 22 and 29 recite, in generally similar language, a method of *increasing gas flow throught a gas feed line via a gas fuel boost pump disposed downstream of the pressure regulator.*

Examiner argued that Frasnetti discloses a controller to maintain a required gas flow pressure to the burner. Further, Examiner apparently intended to refer to Bergquist for teaching the fuel regulator and Smith for teaching a fuel regulating pump and pump controller and further Frasnetti for teaching a controller for maintianing gas flow pressure. However, these references *do not* disclose a gas fuel boost pump disposed downstream of the pressure regulator. Furthermore, these references does not disclose increasing pressure of the gas flow to increase a primary air entrainment in the venture as recited by the present claims.

Further in support of rejection of claims 22-27, Examiner argued that it would have been obvious to modify Bergquist in view of Smith apparatus with controller features taught by U.S Patent 6,287,108 (hereinafter "Rothenberger"). Applicants respectfully submit that, in decision on Appeal by the board mailed on 27 October 2008, Appeal 2008-0555, page 4:

"Rothenberger does not disclose a gas fuel boost pump disposed downstream for a pressure regulator and adapted to increase pressure of the gas flow received from the gas feed line, as recited in independent claims 1, 11, 34, nor does Rothenberger disclose the step of actively increasing pressure of a gas flow through a gas feed line via a gas fuel boost pump disposed downstream of a pressure regulator coupled to the gas feed line, as recited in indepdentent claims 22 and 29." (Emphasys added)

As evident in the decision on appeal, Applicants respectfully submit Rothenberger fails to disclose features of the present independent claims 22 and 29.

For at least these reasons among others, claims 22, 29 and its dependent claims are allowable. Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 103.

Summary

For the reasons set out above, Applicant respectfully submits that the application is in condition for allowance. Favorable reconsideration and allowance of the application are, therefore, respectfully requested.

If the Examiner believes that anything further is necessary to place the application in better condition for allowance, the Examiner is kindly asked to contact Applicant's undersigned representative at the telephone number below.

Respectfully submitted,

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